despite the facts that CD prices are 50 percent higher than cassette tape prices and more than double vinyl album prices[46] and that fewer than one-third of households with home audio systems have CD players.[47] The point is that the future value of ATV is uncertain, so it is not clear that a market-guided outcome would involve only ATV broadcasting.

C. The Future of NTSC Broadcasting

Even if ATV broadcasts become a highly-valued use of spectrum, it does not follow that the spectrum allocated to NTSC broadcasts should be reassigned to other uses. The value of NTSC broadcasts to the remaining consumers may be more than sufficient to support continued NTSC broadcasts, even if many consumers opt to buy ATV receivers. Discontinuing NTSC broadcasts forces individuals to buy ATV receivers in order to receive television broadcasts. Even households that buy ATV receivers may still value NTSC broadcasting. Since the average U.S. household currently has two televisions,[48] many purchasers of ATV receivers will likely have multiple sets. If NTSC broadcasting continues, some of these viewers may wish to have one NTSC receiver (particularly in the early years of ATV broadcasting when many NTSC televisions will be in working order).

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[46] Recording Industry of America, Market Research Committee. Figures represent sales between January and June of 1991.

[47] Consumer Electronics U.S. Sales, Electronic Industry Association, Consumer Electronic Group, June 1991, p. 25.

[48] Nielsen Media Research.

The proposal that NTSC broadcasts terminate at some future date would be consistent with economic efficiency if it were known that other uses of spectrum generate more value to consumers than NTSC broadcasting. Whether this will be true at the specified future date will depend on what alternatives exist at that future date, and not necessarily on ATV penetration. That is, efficiency considerations imply that the proper allocation be based on the value to consumers of the alternative potential uses of the spectrum. A good way to reveal these values is through an auction, whereby spectrum is allocated to users willing to pay the most. While not a perfect measure of consumer value,[49] the willingness-to-pay of various users represents a good approximation of the value to society of using spectrum in that use. We recognize, however, that the FCC lacks the statutory authority to conduct auctions. To achieve economic efficiency, the regulatory mechanism chosen for awarding permits should be based on the same principles (i.e., allocating spectrum to the highest-valued uses). In addition, the allocation across uses should be flexible enough to adjust to changes in consumers' valuations of the different outputs produced by using the spectrum. A flexible approach could accommodate the continued survival of NTSC broadcasting, perhaps at a diminished level, if consumers valued such broadcasts sufficiently.[50]

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[49] See our discussion of the potential discrepancies between total value of a license and willingness-to-pay in our Comment, Digital Audio Radio Services, pp. 9-11.

[50] In a recent proceeding, the FCC proposed to allow market-based mechanisms to allocate spectrum across uses, by allowing (continued...)

D. Mandatory Simulcasting

While the NPRM proposes eliminating NTSC broadcasts after some date, it also proposes to protect the value of existing NTSC equipment up to that date. In part, the NPRM proposes to mandate a certain percentage of simulcasting during the transition period.

Requiring simulcasting could be justified on efficiency grounds if broadcasters have an incentive to undersupply certain types of programs for NTSC broadcasts. That is, absent mandatory simulcasting, consumers would be ill-served as broadcasters choose to offer "excess diversity" (compared to the economically-efficient amount of diversity).

It is true that ATV and NTSC have technological differences, and without mandatory simulcasting broadcasters may tend to produce programming which takes advantage of the comparative strengths of each technology. Such specialization has come to characterize radio programming. Because FM radio has superior sound quality, FM stations have tended to specialize in music programming, while AM stations have tended toward news/talk formats. If all FM broadcasters owned AM stations and simulcasting was mandatory, they would be faced with a choice of either broadcasting programming ill-suited to one band or the other, or, in trying to produce programming suitable for both, wind up with a product not ideally suited for either.

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[50](...continued)
licensees to compensate other licensees for changing frequencies. See Amendment of Section 2.106 of the Commission's Rules to Allocate Technology Bands for Future Requirements, ET Docket 92-9 (January 16, 1992).

In the case of television, the technological features of the two standards may mean that certain programs (e.g., sporting events and feature-length films) are well-suited to ATV, while other programs (such as news shows) would be better-suited to NTSC. Separate programming could allow broadcasters to take advantage of the comparative strengths of both types of broadcasting, potentially providing increased choice to viewers.

If broadcasters produce specialized programming in this manner, some viewers without ATV receivers will be unable to watch certain programming. On the other hand, mandating simulcasts, by reducing programming diversity, prevents others from watching other programs. Relative to the amount of simulcasting that maximizes consumer welfare, broadcasters have no obvious bias in favor of supplying too much or too little simulcasting.[51] It is clear that the larger the number of the viewers without ATV, the smaller are the rewards from broadcasting different programs on the two formats. Hence, when ATV penetration is small, we would expect to see broadcasters simulcasting even in the absence of mandatory minimum amounts of simulcasting. As ATV penetration increases, diversity becomes more valuable, and broadcasters will tend to reduce the amount of simulcasting. A mandated amount of

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[51] The analysis in this Comment is based on economic efficiency. Under this approach, if the loss to consumers who prefer separate programming exceeds the gain to those without ATV who prefer simulcasting, mandatory simulcasting should not be imposed. We recognize that the FCC's concern in mandating a minimum amount of simulcasting may include considerations other than this type of efficiency consideration. For example, minimum simulcasting regulations may prevent certain consumers (those without ATV) from being 'shut-out' of certain types of programming.

simulcasting may prevent broadcasters from providing viewers the variety of broadcasts they would prefer.

VII. Conclusion

While ATV offers many technical improvements over NTSC, there is no way to know whether these improvements will be cost justified for most consumers. Given this uncertainty, the FCC may wish to consider adopting more flexible rules regarding the introduction of ATV than those proposed in the NPRM. Specifically, efficiency considerations suggest that spectrum should be allocated to the highest-valued users. It follows that a regulatory approach that serves to allocate spectrum based on the value to different end uses will tend to maximize consumer welfare.

Just as it is not clear how much spectrum to allocate to ATV, so too it is unclear that NTSC broadcasts should be terminated by some specified future date. NTSC broadcasting may remain an efficient user of spectrum even after ATV gains considerable acceptance.

Efficiency considerations also suggest that the FCC allow broadcasters more flexibility in regard to facility construction and simulcasting. Rules that make holding a license contingent on constructing ATV facilities will encourage construction, but may result in excessively rapid or inappropriate construction if the deadline is too short. Additionally, efficiency considerations would not necessarily require simulcasting of ATV programs. The

incentives of the viewing public and dual license broadcasters appear to be sufficiently aligned to ensure the provision of the mix valued most highly by consumers.

Finally, a consumer welfare standard implies that the allocation of ATV licenses be made in a way which minimizes the cost of doing so. Allocations based on financial qualifications or expected viewership may not accomplish this, as they tend to encourage firms to spend significant real resources, as well to absorb as the resources of the FCC. Unless the process of transferring authorizations is costly, it is likely that broadcast licenses within a given region of spectrum will ultimately come to be held by those who value them most highly, regardless of the initial allocation.